

T-25-17

## Thyristors

### Silicon Controlled Rectifiers

... designed for industrial and consumer applications such as power supplies, battery chargers, temperature, motor, light and welder controls.

- Economical for a Wide Range of Uses
- High Surge Current —  $I_{TSM} = 200$  Amps
- Low Forward "On" Voltage — 1.2 V (Typ) @  $I_{TM} = 20$  Amps
- Practical Level Triggering and Holding Characteristics — 10 mA (Typ) @  $T_C = 25^\circ\text{C}$
- Rugged Construction in Either Pressfit, Stud or Isolated Stud Package
- Glass Passivated Junctions for Maximum Reliability

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage, Note 1	$V_{DROM}$		Volts
Repetitive Peak Reverse Voltage, Note 1	$V_{RROM}$		
MCR6200, S6210, S6220 A		100	
MCR6200, S6210, S6220 B		200	
MCR6200, S6210, S6220 D		400	
MCR6200, S6210, S6220 M		600	
Non-Repetitive Peak Off-State Voltage, Note 1	$V_{DSOM}$		Volts
Non-Repetitive Peak Reverse Voltage, Note 1	$V_{DROM}$		
MCR6200, S6210, S6220 A		150	
MCR6200, S6210, S6220 B		250	
MCR6200, S6210, S6220 D		500	
MCR6200, S6210, S6220 M		700	
RMS On-State Current ( $T_C = 75^\circ\text{C}$ )	$I_{T(RMS)}$	20	Amps
Peak Non-Repetitive Surge Current (One Full Cycle of surge current at 60 Hz, preceded and followed by rated current, $T_C = 75^\circ\text{C}$ )	$I_{TSM}$	200	Amps
Circuit Fusing Considerations ( $t = 8.3$ ms)	$I^2t$	170	$\text{A}^2\text{s}$
Peak Gate Power (10 $\mu\text{s}$ Max)	$P_{GM}$	40	Watts
Average Gate Power	$P_{G(AV)}$	0.5	Watt
Operating Junction Temperature Range	$T_J$	-65 to +100	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +150	$^\circ\text{C}$
Stud Torque	—	30	in. lb.

#### THERMAL CHARACTERISTICS

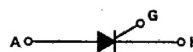
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case MCR6200	$R_{\theta JC}$	1.2	$^\circ\text{C/W}$
S6210, S6220		1.4	

Note 1. Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.

MCR5164-67  
(See 2N5168)

**MCR6200**  
**S6210**  
**S6220**  
**Series**

SCRs  
20 AMPERES RMS  
100 thru 600 VOLTS



CASE 174-04  
(TO-203AA)  
STYLE 1  
MCR6200 SERIES



CASE 263-04  
STYLE 1  
S6210 SERIES



CASE 311-02  
STYLE 1  
S6220 SERIES

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ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$  unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Instantaneous Forward Breakover Voltage (Gate Open, $T_C = 100^\circ\text{C}$ ) MCR6200, S6210, S6220 MCR6200, S6210, S6220 MCR6200, S6210, S6220 MCR6200, S6210, S6220	$V_{(BO)O}$	100 200 400 600	— — — —	— — — —	Volts
Peak Blocking Current (Rated $V_{DOM}$ @ $T_C = 100^\circ\text{C}$ ) $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	$I_{DOM}, I_{RROM}$	— —	— —	10 2	$\mu\text{A}$ mA
Peak On-State Voltage ( $I_T = 100\text{ A Peak}$ )	$V_T$	—	—	2.4	Volts
Gate Trigger Current (Continuous dc) (Main Terminal Voltage = 12 Vdc, $R_L = 30\text{ Ohms}$ )	$I_{GT}$	—	—	15	mA
Gate Trigger Voltage (Continuous dc) (Main Terminal Voltage = 12 Vdc, $R_L = 30\text{ Ohms}$ )	$V_{GT}$	—	—	2	Volts
Holding Current (Either Direction) (Main Terminal Voltage = 12 Vdc, Gate Open)	$I_{HO}$	—	—	20	mA
Gate Controlled Turn-On Time ( $V_D = V_{(BO)O}$ , $I_T = 30\text{ A Peak}$ , $I_{GT} = 200\text{ mA}$ , Rise Time = $0.1\text{ }\mu\text{s}$ )	$t_{gt}$	—	2	—	$\mu\text{s}$
Critical Rate-of-Rise of Off-State Voltage ( $V_D = V_{(BO)O}$ , Exponential Voltage Rise, Gate Open, $T_C = 100^\circ\text{C}$ ) MCR6200, S6210, S6220 MCR6200, S6210, S6220 MCR6200, S6210, S6220	$dv/dt$	10 10 10	100 150 75	— — —	V/ $\mu\text{s}$